



JABATAN KERJA RAYA MALAYSIA
CAWANGAN KEJURUTERAAN ELEKTRIK
UNIT PENSIJILAN BAHAN & STANDARD

TECHNICAL INFORMATION

LED DOWNLIGHT

A. COMPANY INFORMATION						
COMPANY NAME:						
ADDRESS:					TELEPHONE NO:	
					FAX NO:	
					COMPANY EMAIL:	
ISO CERTIFIED COMPANY				REGISTRATION NO:	SCOPE:	
1. ISO 9001	<input type="checkbox"/>	YES	<input type="checkbox"/>	NO
2. ISO 14001	<input type="checkbox"/>	YES	<input type="checkbox"/>	NO
3. ISO 50001	<input type="checkbox"/>	YES	<input type="checkbox"/>	NO
4. ISO	<input type="checkbox"/>	YES	<input type="checkbox"/>	NO

B. PRODUCT INFORMATION	
BRAND NAME :	
STANDARD NO.: (MS IEC/IEC/etc.)	
CERTIFICATE OF APPROVAL : (SURUHANJAYA TENAGA)	DATE OF ISSUE:
	VALID UNTIL:
PRODUCT CERTIFICATION : LICENSE (SIRIM/OTHER)	DATE OF ISSUE:
	VALID UNTIL:
TEST REPORT NO.:	TESTING LABORATORY:
	DATE OF ISSUE:
COUNTRY OF MANUFACTURE:	
NAME OF MANUFACTURER:	
FACTORY ADDRESS :	

TECHNICAL INFORMATION ON INDOOR LUMINAIRE - LED DOWNLIGHT

Item	Reference	To be filled by Applicant			For JKR use
		Model :	Data / Test Report No.:	Page No.:	
C. Luminaires : General Information					
C.1.1 Tested Compliance To standard					
a) MS IEC 60598 -2 - 1 or -2	L-S1	<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/>
b) IES LM-80-08		<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/>
c) IES LM-79-08		<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/>
d) MS IEC 62722-2-1		<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/>
e) MS IEC 62031		<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/>
f) IEC 61547		<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/>
g) IEC 62471		<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/>
h) MS IEC 61000-3-2		<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/>
i) BS EN 55015		<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/>
j) CISPR 15		<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/>
k) IEC 62493		<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/>
C.1.2 Manufactured under " Lighting Class LED"	L-S1	<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/>
C.1.3 Commercially available	L-S1	<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/>
C.1.4 The Luminaire shall be new and complete with LED control Gear Thermal Management Unit, surge and overvoltage protection		<input type="checkbox"/> Optical system <input type="checkbox"/> LED Control Gear(Driver) <input type="checkbox"/> Thermal Management Unit <input type="checkbox"/> Surge and overvoltage protection			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
C.1.5 Input Power 230 V (+10,-6%) 50Hz	MS IEC 60598	<input type="checkbox"/> Yes <input type="checkbox"/> No Please Specify : V A			<input type="checkbox"/>
C.1.6 Construction type :	L-S1	<input type="checkbox"/> Separated <input type="checkbox"/> Integrated			<input type="checkbox"/>
C.1.7 Classification of luminaire as to MS IEC 60598	MS IEC 60598	<input type="checkbox"/> Class 1 <input type="checkbox"/> Class 2 <input type="checkbox"/> Class 3			<input type="checkbox"/>
C.1.8 Operating ambient temperature/ Humidity (high humidity of 95% RH and ambient temperature of 35°C	MS IEC 60598	Op. temp. : °C op. Humidity : % RH			<input type="checkbox"/>
C.1.9 Storage Temperature	-	: °C			<input type="checkbox"/>
C.1.14 Means of connecting GI flexible conduit to LED control Gear /Luminaires available	L-S1	<input type="checkbox"/> Yes <input type="checkbox"/> No Connection method:			<input type="checkbox"/>
C.1.15 Power Factor ≥ 0.9 lagging	MS IEC 60598	<input type="checkbox"/> Yes <input type="checkbox"/> No Please Specify :			<input type="checkbox"/>
C.1.16 Total Power Consumption ≤ 20W	MS IEC 60598	<input type="checkbox"/> Yes <input type="checkbox"/> No Please Specify :			<input type="checkbox"/>

TECHNICAL INFORMATION ON INDOOR LUMINAIRE - LED DOWNLIGHT

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C.1.17 Total harmonics distortion(THD) ≤ 20%		<input type="checkbox"/> Yes <input type="checkbox"/> No THD(%) :			<input type="checkbox"/>						
C.1.18 Rated Correlated Colour Temperature (CCT)	LM-79	<input type="checkbox"/> 2700K <input type="checkbox"/> 4500K <input type="checkbox"/> 3000K <input type="checkbox"/> 5000K <input type="checkbox"/> 3500K <input type="checkbox"/> 6500K <input type="checkbox"/> 4000K <input type="checkbox"/> _____ K			<input type="checkbox"/>						
C.1.19 Luminaire Total lumen Output according to below <table border="1" style="font-size: small;"> <tr> <th>CCT range</th> <th>Required lumen</th> </tr> <tr> <td>2700K to 4500 K</td> <td>≥ 850 lm</td> </tr> <tr> <td>5000K to 6500K</td> <td>≥ 950 lm</td> </tr> </table>	CCT range	Required lumen	2700K to 4500 K	≥ 850 lm	5000K to 6500K	≥ 950 lm	LM-79	<input type="checkbox"/> Yes <input type="checkbox"/> No Please specify : lm			<input type="checkbox"/>
CCT range	Required lumen										
2700K to 4500 K	≥ 850 lm										
5000K to 6500K	≥ 950 lm										
C.1.20 Luminaire efficacy (lm/W) ≥75 lm/W	LM-79	<input type="checkbox"/> Yes <input type="checkbox"/> No Please specify : lm/W			<input type="checkbox"/>						
C.1.21 Rated Color Rendering Index according to below <table border="1" style="font-size: small;"> <tr> <th>CCT range</th> <th>Required CRI</th> </tr> <tr> <td>2700K to 3500 K</td> <td>≥ 80</td> </tr> <tr> <td>4000K to 6500K</td> <td>≥ 80</td> </tr> </table>	CCT range	Required CRI	2700K to 3500 K	≥ 80	4000K to 6500K	≥ 80	LM-79	<input type="checkbox"/> Yes <input type="checkbox"/> No Please specify :			<input type="checkbox"/>
CCT range	Required CRI										
2700K to 3500 K	≥ 80										
4000K to 6500K	≥ 80										
C.1.22 Light Output Ratio		Please specify :			<input type="checkbox"/>						
C.1.23 Size/Diameter		: mm			<input type="checkbox"/>						
C.1.24 Net weight		: g			<input type="checkbox"/>						
C2. LED Control Gear (LED Driver)											
C.2.1 Brand		:			<input type="checkbox"/>						
C.2.2 Model		:			<input type="checkbox"/>						
C.2.3 Manufacturer & Country Of manufacturer		Manufacturer: Country :			<input type="checkbox"/>						
C.2.4 Control Gear Type	MS IEC 61347-2-13	<input type="checkbox"/> Constant Voltage V <input type="checkbox"/> Constant Current A <input type="checkbox"/> Programmable <input type="checkbox"/> Other			<input type="checkbox"/>						
C.2.5 Tested compliance to a) MS IEC 61347-2-13 b) MS IEC 62384 c) BS EN 55015/CISPR 15 b) MS IEC 61000-3-2		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>						
C.2.6 Ability to operate and maintain consistent light output over voltage variation from +10% to -6% of rated voltage	MS IEC 60598	<input type="checkbox"/> Yes <input type="checkbox"/> No Please Specify :			<input type="checkbox"/>						

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C.2.7 Power Factor ≥ 0.9 lagging	MS IEC 61347-2-13	<input type="checkbox"/> Yes <input type="checkbox"/> No Power Factor :			<input type="checkbox"/>
C.2.8 Rated maximum operating temperature of the LED control gear shall not exceed 70° C.	MS IEC 61347-2-13	<input type="checkbox"/> Yes <input type="checkbox"/> No Tc : ° C			<input type="checkbox"/>
C.2.9 Total harmonics distortion (THD) $\leq 20\%$	MS IEC 61000-3-2	<input type="checkbox"/> Yes <input type="checkbox"/> No THD(%) :			<input type="checkbox"/>
C.2.10 Automatic shutdown in case of system failure	L-S1	<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/>
C.2.11 Overvoltage Protection at 350 V	MS IEC 61347-2-13	<input type="checkbox"/> Yes <input type="checkbox"/> No Maximum Overvoltage withstand rate : V			<input type="checkbox"/>
C.2.12 Ability to withstand		<input type="checkbox"/> Yes <input type="checkbox"/> No Please Specify : A			<input type="checkbox"/>
a) short circuit current		<input type="checkbox"/> Yes <input type="checkbox"/> No Please Specify : W			<input type="checkbox"/>
b) overload		<input type="checkbox"/> Yes <input type="checkbox"/> No Please Specify : V			<input type="checkbox"/>
c) Over voltage		<input type="checkbox"/> Yes <input type="checkbox"/> No Please Specify : V			<input type="checkbox"/>
c) under voltage		<input type="checkbox"/> Yes <input type="checkbox"/> No Please Specify : ° C			<input type="checkbox"/>
d) over temperature		<input type="checkbox"/> Yes <input type="checkbox"/> No Please Specify :			<input type="checkbox"/>
e) Protection to surges		<input type="checkbox"/> Yes <input type="checkbox"/> No Please Specify :			<input type="checkbox"/>
C2.13 Driver Efficiency		Please Specify : %			<input type="checkbox"/>
C.2.14 Dimmable		<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/>
C3. LED Optical System					
C.3.1 GENERAL					
C.3.1.1 Incorporate one piece full bowl reflector		<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/>
C.3.1.2 Type of LED		<input type="checkbox"/> COB <input type="checkbox"/> LED module <input type="checkbox"/> Other :			<input type="checkbox"/>
C.3.1.3 The Luminaire shall operate even though there is failure of a partial number of LEDs		<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/>
C.3.1.4 LED/LED Module shall not be driven more than the rated drive current		<input type="checkbox"/> Yes <input type="checkbox"/> No LED rated drive current : mA LED Driven drive Current: mA			<input type="checkbox"/>
C.3.1.5 Type of LED interconnection method <i>*schematics diagram to be provided</i>		<input type="checkbox"/> Series <input type="checkbox"/> parallel <input type="checkbox"/> Series + parallel			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

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		Wattage : W			
		Price : RM			
C.3.2 Light Source					
C.3.2.1 Type of LED Technology		<input type="checkbox"/> RGB <input type="checkbox"/> Blue LED + phosphor <input type="checkbox"/> Other :			<input type="checkbox"/>
C.3.2.2 LED Brand		:			<input type="checkbox"/>
C.3.2.3 Model		:			<input type="checkbox"/>
C.3.2.4 Tested Compliance to a) MS IEC 62031 b) MS IEC 62471 c) IESNA LM-80-08 d) IEC 62717	L-S1	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
C.3.2.5 Wattage per LED	LM-80	: W			<input type="checkbox"/>
C.3.2.6 Maximum LED Drive Current	LM-80	: A			<input type="checkbox"/>
C.3.2.7 Forward Voltage	LM-80	: V			<input type="checkbox"/>
C.3.2.8 Lumen Output@ rated drive current I _f	LM-80	: lm			<input type="checkbox"/>
C.3.2.9 LED /LED module Efficacy (lm/W)	LM-80	: lm/W			<input type="checkbox"/>
C.3.1.10 Correlated Colour Temperature (CCT)	LM-80	: K			<input type="checkbox"/>
C.3.1.11 Color Rendering Index (>80)	LM-80	:			<input type="checkbox"/>
C.3.1.12 LED lumen Maintenance (L70, @25 °C)	LM-80	: hrs			<input type="checkbox"/>
C.3.1.13 Junction temperature, T _j	LM-80	: ° C.			<input type="checkbox"/>
C.3.1.14 LED Risk Group ,RG0(Exempt) classification as per IEC 62471 .	IEC 62471	<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/>
C.3.3 Mechanical Construction of Optical System					
C3.3.1 The Optical System Support shall be made from mild steel /diecast aluminium with minimum thickness of 1.3 mm	L-S1	<input type="checkbox"/> Yes <input type="checkbox"/> No Thickness : mm Material :			<input type="checkbox"/>
C3.3.2 The ring shall be made from diecast aluminium with minimum thickness of 1.3 mm.	L-S1	<input type="checkbox"/> Yes <input type="checkbox"/> No Thickness : mm Material :			<input type="checkbox"/>
C.3.3.3 Support and ring Coated with electrostatic powder	L-S1	<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/>
C.3.3.4 Retention Clip made from stainless steel	L-S1	<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/>

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C3.4 Optical Control/Secondary Optics					
C.3.4.1 The optical system shall comprise of optical lens reflector and glass diffuser.(if applicable)	L-S1	<input type="checkbox"/> Aluminium reflector <input type="checkbox"/> Other :			<input type="checkbox"/>
		<input type="checkbox"/> Glass diffuser <input type="checkbox"/> Other :			<input type="checkbox"/>
C.3.4.2 Good even light distribution with minimal glare in both axial and transverse planes	L-S1	<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/>
C.3.4.3 Aluminium reflector used If Yes :	L-S1	<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/>
i) Reflector made from high purity anodized aluminium with at least 99.85% pure aluminium (*mill certificate to be provided)		<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/>
ii) low iridescent/iridescent free		<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/>
iii) Thickness >0.5 mm		<input type="checkbox"/> Yes <input type="checkbox"/> No Please specify : mm			<input type="checkbox"/>
C.3.4.4 Diffuser If Yes	L-S1	<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/>
i) type of diffuser		<input type="checkbox"/> Clear <input type="checkbox"/> Frosted <input type="checkbox"/> other :			<input type="checkbox"/>
ii) Material		<input type="checkbox"/> Glass <input type="checkbox"/> PC <input type="checkbox"/> PMMA <input type="checkbox"/> PETG <input type="checkbox"/> Other :			<input type="checkbox"/>
C.3.4.5 Photometric data provided		<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/>
C.3.4.6 Beam Angle (> 60°)	LM-79	<input type="checkbox"/> Yes <input type="checkbox"/> No Please specify : °			<input type="checkbox"/>
C4 Thermal Management Unit					
C.4.1 Type of material used	L-S1	<input type="checkbox"/> Aluminium <input type="checkbox"/> Copper <input type="checkbox"/> Carbon <input type="checkbox"/> Other :			<input type="checkbox"/>
C.4.2 Heat sink thermal resistance	L-S1	Please specify : °C/W			<input type="checkbox"/>

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		Price : RM			
C5 Connection cables/wiring					
C.5.1	Connection Cables shall be terminated in a termination Block marked L and N	MS IEC 60598	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
C.5.2	For Class 1 Luminaires, a brass direct pressure type terminal provided near the termination block for earth connection	L-S1	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
C.5.3	Earth terminal clearly marked with the standard earth terminal symbol	L-S1	<input type="checkbox"/> Yes <input type="checkbox"/> No		
C.5.4	Wiring done in a neat way , no contact with heat producing parts	MS IEC 60598	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
C.5.5	Mean of clamping the electrical cable provided.	L-S1	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
C.5.6	Cable lamp arrangement shall not damage the insulation of the cables	MS IEC 60598	<input type="checkbox"/> Yes <input type="checkbox"/> No		
C.5.7	Wiring within the luminaire using HR105°C cable	MS IEC 60598	<input type="checkbox"/> Yes <input type="checkbox"/> No cable size :sq. mm		<input type="checkbox"/>
C.5.8	Terminal block comply and tested to IEC 60998-1		<input type="checkbox"/> Yes <input type="checkbox"/> No		
C6 For separated Optical and LED Control Gear system					
C.6.1	Connection of optical & LED control gear using plug & socket/ connection unit . Connection unit details: i) Non- flammable ii) Rated , minimum 10A iii) comply to MS IEC 60838-2-2	MS IEC 60838-2-2	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
			<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
			<input type="checkbox"/> Yes <input type="checkbox"/> No Rating : A		<input type="checkbox"/>
			<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
C.6.2	HR 105°C cables shall be used i) type of cable	MS IEC 60598	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>
			<input type="checkbox"/> stranded <input type="checkbox"/> single core <input type="checkbox"/> flexible cable Cable size :sq. mm		<input type="checkbox"/>
C.6.3	Cable connection between Optical sytem and LED Control Gear not more than 300mm	L-S1	<input type="checkbox"/> Yes <input type="checkbox"/> No Length: mm		<input type="checkbox"/>
C.6.4	Cable enclosed in Cable Sleeve HR105°C	L-S1	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/>

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		Price : RM			
C7 Other					
C7.1 Optical and Control gear system provided with hooks/suitable means for hanging purposes <i>* hanging method/manual to be submitted</i>	L-S1	<input type="checkbox"/> Yes <input type="checkbox"/> No type of hanging method:			<input type="checkbox"/>
C.7.2 Installation instruction provided	L-S1	<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/>
C.7.3 The manufacturer shall provide a minimum 5 years period warranty certificate	L-S1	<input type="checkbox"/> Yes <input type="checkbox"/> No Other :			<input type="checkbox"/>

TECHNICAL INFORMATION

LED DOWNLIGHT

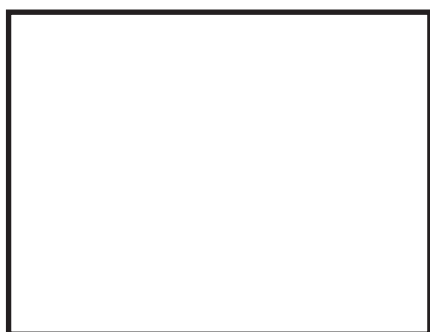
D. OTHERS (Please tick \checkmark where applicable)

	Yes	No	For JKR use
1. Manual / Documents (Please specify and attach relevant documents)			
i. Method of Installation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ii. Method of Operation & Maintenance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Warranty Certificate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Photos (hardcopy & softcopy) shall be attached			
i. Front view (with ruler as measurement guide)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ii. Bottom view (with ruler as measurement guide)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iii. Optical System (LED Chip / Module)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iv. LED Control Gear	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
v. Product Marking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

E. PENGESAHAN

Adalah saya dengan ini mengesahkan segala keterangan yang diberikan/dikemukakan bagi produk di atas adalah benar. Jika saya didapati membuat pengakuan **PALSU**, maka tindakan seterusnya boleh diambil oleh pihak JKR ke atas diri dan syarikat diwakili oleh saya.

Cop Syarikat :



Tandatangan :

Nama :

Jawatan :

Tarikh :

F. ULASAN (Untuk Kegunaan Pejabat)

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